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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,272	03/10/2004	Brian S. Higgins	7340-010	2948

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EXAMINER

RINEHART, KENNETH

ART UNIT	PAPER NUMBER
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3749

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/797,272	Applicant(s) HIGGINS, BRIAN S.	
	Examiner Kenneth B. Rinehart	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2007.
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-24 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 21 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed 1/5/07 have been fully considered but they are not persuasive. The applicant states that there is disclosure of parameters necessary to enable one of ordinary skill in the art to practice the present invention. The examiner disagrees. The discussion of times, temperatures, ratios of concentration are all open ended ranges. Additionally, the specification additionally lists 7 parameters to increase the residence time and 4 parameters to increase the reducing potential in the flue gases. The specification has few details as to what values these parameters should be in order to enable the invention. Consequently the specification is not enabling as undue experimentation would be required.

Claim Rejections - 35 USC § 112

Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 refers to adjusting the reducing environment time period such that SO₃ is reduced to SO₂ prior to selective catalytic reduction to achieve a desirable level of SO₃” which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 9 refers to “adjusting the reducing environment time period such that SO₃ is reduced to SO₂ to achieve a desirable level of SO₃”

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which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 17 refers to “adjusting the reducing environment time period such that SO₃ is preferentially reduced to SO₂ to achieve a desirable level of SO₃” which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Claims 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kindig (4824441). Kindig shows a) partially combusting the fuel in a first stage to create a reducing environment (col. 10, lines 51-54), b) adjusting the reducing environment time period such that SO₃ is reduced to SO₂ to achieve a desirable level of SO₃; (col. 13, lines 8-23, SO₃ and SO₂ are inherently produced during combustion, and reduction is inherently occurring.), c) combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment, combusting the remainder of the fuel in an oxidizing environment (col. 10, lines 43-47), thereby controlling the levels of SO₃ in the flue gases, reducing the conversion of levels of SO₃ in the flue gases , thereby controlling the levels of SO₃ in the flue gases (col. 13, lines 20-22), micro-staging the first stage fuel combustion , the micro-staging is provided through the use of low-Nox burners (col. 12, line 43), macro-staging the first stage of fuel combustion, the macro-staging is provided through the use of over-fired air (col. 10, lines 46), including a combination of micro-staging and macro-staging (col. 12, line 43, col. 10, line 46), the micro-

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staging is provided by low-Nox burners and the macro-staging is provided by over-fired air (col. 12, line 43, col. 10, line 46), the fuel is coal (col. 1, line 16).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, 9-11, 16, 17-19, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carver et al (4381718) in view of Fan (2004/0120872). Carver discloses partially combusting the fuel in a first stage to create a reducing environment (1, fig. 1), b) adjusting the reducing environment for a time period such that SO₃ is reduced to SO₂ prior to ... to achieve a desirable level of SO₃; (2 to 3, SO₃ and SO₂ are inherently produced during combustion, and reduction is inherently occurring, residence time adjusted prior to lean stage.), c) combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment, combusting the remainder of the fuel in an oxidizing environment, thereby controlling the levels of SO₃ in the flue gases, reducing the conversion of levels of SO₃ in the flue gases, thereby controlling the levels of SO₃ in the flue gases (4, fig. 1), micro-staging the first stage fuel combustion, the micro-staging is provided through the use of low-Nox burners (col. 5, line 23), the fuel is coal (fig. 1). Carver discloses applicant's invention substantially as claimed with the exception of selective catalytic reduction. Fan teaches selective catalytic reduction (44, fig. 1) for the purpose of reducing emissions. It would have been obvious

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to one of ordinary skill in the art to modify Carver et al by including selective catalytic reduction as taught by Carver for the purpose of reducing emissions to meet environmental requirements.

Claims 4-7, 12-15, 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carver et al (4381718) in view of Fan (2004/0120872) as applied to claim 1,9,17 above, respectively, and further in view of Kindig (4824441). Carver et al (4381718) in view of Fan (2004/0120872) discloses applicant's invention substantially as claimed with the exception of macro-staging the first stage of fuel combustion, the macro-staging is provided through the use of over-fired air, including a combination of micro-staging and macro-staging, the micro-staging is provided by low-Nox burners and the macro-staging is provided by over-fired air. Kindig teaches macro-staging the first stage of fuel combustion, the macro-staging is provided through the use of over-fired air (col. 10, lines 46), including a combination of micro-staging and macro-staging (col. 12, line 43, col. 10, line 46), the micro-staging is provided by low-Nox burners and the macro-staging is provided by over-fired air (col. 12, line 43, col. 10, line 46) for the purpose of reducing emissions. It would have been obvious to one of ordinary skill in the art to modify Carver by including macro-staging the first stage of fuel combustion, the macro-staging is provided through the use of over-fired air, including a combination of micro-staging and macro-staging, the micro-staging is provided by low-Nox burners and the macro-staging is provided by over-fired air as taught by Kindig for the purpose of reducing emissions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Rinehart whose telephone number is 571-272-4881. The examiner can normally be reached on 7:20 -4:20.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Josiah Cocks can be reached on 571-272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kbr


KENNETH RINEHART
PRIMARY EXAMINER